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The Impact of Military Training on Veterans' Earnings in the Private Sector: Is There Complimentarity Between Military and Private Training for Veterans?

by

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This thesis specified and estimated standard human capital earnings models to investigate the effect of military training on the post-military wages of veterans, and the relative payoff of military training for veterans compared to the payoff of civilian training for nonveterans. In addition, the thesis analyzed the complimentarity between military and post-military private sector training and the effect of military training on private sector wages of veterans when occupation variables are included in the models. The National Longitudinal Survey, Youth Cohort, for 1983, was used as the source of data. The results of the thesis indicate that military training increases post-military private sector earnings of veterans by 0.18 percent per week of training, which exceeds the payoff to civilian training for nonveterans of 0.14 percent per week of training. No complimentarity was found between military and post-service private sector training. When type of occupation is included in the models, the wage effect of military training fell to 0.14 percent per week of training. Overall, the thesis demonstrates that the military has been an important source of training during the all volunteer era that is comparable to that received by nonveterans in the private sector.

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The results of the thesis indicate that military training increases post-military private sector earnings of veterans by 0.18 percent per week of training, which exceeds the payoff to civilian training for nonveterans of 0.14 percent per week of training. No complimentarity was found between military and post-service private sector training. When type of occupation is included in the models, the wage effect of military training fell to 0.14 percent per week of training. Overall, the thesis demonstrates that the military has been an important source of training during the all volunteer era that is comparable to that received by nonveterans in the private sector.

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I. INTRODUCTION

A. BACKGROUND

An important area of study has been how military service affects the post-military labor market experiences of veterans. One particular area of concern has been how training received in the military affects veterans' productivity in civilian jobs. In the all-volunteer era recruits often view the military as providing training and job skills that will benefit them in their civilian careers. In choosing the military over the civilian sector, they may implicitly assume that military training is beneficial in an absolute sense. A further assumption may be that military training is also beneficial relative to the training they would have received had they entered the civilian job market directly.

The current military downsizing within the Department of Defense is resulting in the separation of many volunteers -- with all service lengths, in all pay grades, and in all occupational specialties -- who might otherwise have made the military a career. The transition from the military to the civilian sector may be especially difficult for service members with little formal military training or with skills and training having few counterparts in the civilian sector.

This has lead policy-makers to attempt to design special programs to assist service members in the transition process. One such program is aimed at subsidizing the training by private firms of those veterans whose skills do not readily translate to the civilian job market [Ref. 1]. At issue is whether this program can be effective in improving separated veterans' long-term job prospects.

The purpose of this thesis is to examine the absolute and relative payoffs of military training. The effectiveness of military training can be measured by its impact on veterans' post-service civilian wages. During the current downsizing, the goal of a "smaller but better" military may affect both the quantity and quality of military training provided, which may affect veterans' civilian productivity. If military training is positively associated with civilian earnings levels, then decreases in training during the downsizing may harm recruitment.

The military was not created to provide society with skilled workers, but to "provide for the common defense," even though it seems that both the Department of Defense and those enlisting in the military believe that skills learned in the military are applicable to the private sector. The military implies that military training is beneficial to civilian employment with recruitment advertising slogans such as "a great place to start." Also, the National Longitudinal Survey of Youth (discussed later in this chapter) shows that, from

its sample of those who enlisted in the military between 1979 and 1983, 73 percent stated that one reason they joined the military was "to get trained in a skill that will help me to get a civilian job when I get out" [Ref. 2].

If indeed military training enhances a veteran's post-service private sector earnings, a win-win-win situation arises. The military benefits through increased recruitment in which the "best and brightest" can be attracted. Society as a whole benefits from receiving skilled workers as a side effect of national defense. Finally, the individual benefits through increased civilian earnings as an effect of military training.

The results of this thesis indicate that military training, on average, positively affects the post-service private sector earnings of veterans. When type of occupation is added to the analysis, formal military training (along with previous private sector apprenticeship training) still significantly increases earnings.

B. OBJECTIVES

This thesis examines the effect of military training on the private sector earnings of veterans from the all-volunteer force era. It also compares the rate of return from different types of military training to that from several types of private sector training. The primary questions to be answered by this thesis include the following: (1) Does military

training affect the private sector wages of veterans? (2) How does the payoff of military training for veterans compare to the payoff of civilian training for nonveterans? (3) For the veteran, are military and post-military private sector training complementary? That is, does military training yield a differential payoff when combined with post-military private sector training? (4) Finally, does military training affect private sector wages of veterans when occupation is included in the analysis? The outcome of this thesis will allow training and manpower planners to better assess the effectiveness of military training for veterans and assist policy-makers in designing transition programs for veterans.

C. DATA DESCRIPTION AND ASSUMPTIONS

This thesis uses information on veterans and nonveterans from the National Longitudinal Survey - Youth Cohort (NLSY) [Ref. 2]. The NLSY, which is sponsored by the U.S. Departments of Labor and Defense under a grant to the Center for Human Resource Research at Ohio State University, is a continuation of the National Longitudinal Surveys begun in 1965 by the Center for Human Resource Research for the Office of Manpower, Evaluation and Research of the U.S. Department of Labor.

The NLSY is a nationally representative panel study of 12,686 males and females between the ages of 14 and 21 years as of January 1, 1979. Participants of this survey were

interviewed every year starting in 1979. The NLSY provides extensive information on respondents' earnings, employment, education and job training.

The military subsample of the NLSY covers the 17 year-old to 21 year-old cohort serving in the military as of January 1, 1979. Because members of the armed forces were oversampled in 1979, the NLSY provides a large number of observations of veterans. Women in this subsample were oversampled at approximately six times the rate for men.

The longitudinal data used in this thesis comes from the 1979 through 1983 interviews. After 1983, the oversampled military participants were no longer interviewed. Job information is based on the respondent's job held at the 1983 interview date or the most recent job. If a respondent was working two jobs as of the 1983 interview, the information on the job that the respondent began first was used. If the respondent was not working at the 1983 interview date, the information on the most recent job held in 1983 was used.

This thesis analyzes the earnings effects of private sector training, military training, the complimentarity of military and private sector training, and occupation. Though this analysis includes the effect of type of occupation on earnings, it does not attempt to match training with the type of occupation. That is, administrative training is assumed to be equally important to those in a technical occupation as technical training would have been. Previous studies that

have not included the effect of type of occupation on earnings in the analysis, (Campbell et al. [Ref. 3], Rumberger and Daymont [Ref. 4], Neuman and Ziderman [Ref. 5]), have shown that the effect of training that corresponds to subsequent occupation is significant. However, in a more recent study, Hotchkiss [Ref. 6] showed that there is no direct earnings effect from training that corresponds with subsequent occupation when the effect of type of occupation is accounted for in the analysis. Therefore, this analysis assumes that the exclusion of variables to account for the effect of occupation-related training is negligible because of the inclusion of variables that account for the effect of type of occupation.

D. DEFINITIONS

A veteran is defined as a person who served on active military duty and did not leave the military prior to completion of his/her initial obligation. A college graduate is defined as a person who received a bachelor's degree or higher. Off-the-job training is training received from a business college, nursing program, vocational-technical institute, barber-beauty school, flight school, correspondence course, or other training of this type. Total military training is equal to weeks of formal military training plus weeks of military on-the-job training. Total private sector training is equal to weeks of training from a previous job

plus weeks of training completed at current/most recent job. The complimentarity variable is a dummy variable equal to one if a respondent received both military training and completed some training from his/her current/most recent civilian job or training from a previous private sector job.

E. ORGANIZATION OF THE STUDY

This thesis contains five chapters. Chapter I, the introduction, gives an overview of the study focusing on background, and objectives, and data source. Chapter II reviews previous studies applicable to this thesis. The strengths and weaknesses of the various methods used to explain the effectiveness of training are discussed. Chapter III specifies the methodology of this thesis. A detailed explanation of the choice of the subsample, the definitions of the variables, and the specification of the models is given. Chapter IV presents the results and discusses the statistical analyses of the models. Chapter V presents the conclusions and recommendations drawn from the statistical analysis.

II. LITERATURE REVIEW

Four previous studies of training are reviewed below. The first two studies, Mangum and Ball [Ref. 8 and Ref. 9], analyze military training. The other two, Hotchkiss [Ref. 6] and Lynch [Ref. 7], analyze private sector training. The greatest difference between the studies is the method by which they measure training, training-occupation match, and occupation, and the extent to which these variables are captured in the models. This thesis closely follows the methods used by Lynch.

Mangum and Ball [Ref. 8] analyzed the transferability of military training to the private sector job market as a measure of the benefit of military training. Their sample, drawn from the NLS youth cohort, included only those respondents who had completed school prior to 1980. The military portion of the sample included only those who began active military duty between July 1, 1975 and December 31, 1979. Military members still serving on active duty, those who left the military after completion of their obligated service, and those who left the military prior to completion of their obligated service were all included in the sample. Mangum and Ball considered a transfer of military skill to the private sector to occur if a respondent's military

occupational specialty matched any post-service civilian occupation held prior to the 1984 interview date.

Mangum and Ball used logistic regression analysis, with the dependent variable equal to one in "...the case of a transfer of skills between military occupational specialty and occupation of postmilitary civilian employment...." [Ref. 8, p. 429] The explanatory variables used were Armed Forces Qualificaton (AFQT) score, labor market experience, labor market experience squared, minority, type of institutional provider, and occupation of training. The institutional training provider variables captured who provided the training (e.g., vocational/technical institute, correspondence course, apprenticeship, etc.), whereas the occupation of training variables captured what type of training was provided (e.g., professional, crafts, services, etc.). Military-provided training was the omitted category for the institutional training provider variables.

They found that the training provided by the military is comparable, in the extent of its transferability, to training that is provided in the private sector, with the exception of employer-provided training. Mangum and Ball wrote:

> "...that the percentage of individuals in the sample who received occupational training in the military and transferred these skills to civilian employment is very similar to the percentage of individuals who received training from nonmilitary providers and were able to use their acquired skill in employment." [Ref. 8, p. 432]

Though the transferability of military-provided training is important, it does not explain how well military training helps a veteran in the private sector. That is, transferability does not answer key questions about military-provided training: How do the benefits of military training compare to the benefits of private sector training? What effect on earnings does military training have?

Another study by Mangum and Ball [Ref. 9] on the transferability of military training included an analysis of labor market outcomes (i.e., earnings) of military training. Only training periods of 30 days or more were included in this study. The sample used in their 1987 study [Ref. 8] was also used in this analysis of the effect of military training on wages, with only the results for males presented.

Ordinary least squares analysis was performed on three earnings models to analyze the effect of military training, with the natural logarithm of wages as the dependent variable. The models included explanatory variables to capture the effect of education, accumulated human capital, personal characteristics, and labor market environment. The first model included dummy variables to distinguish the training provider--military, civilian, and both military and civilian (complimentarity). The second model added a training-occupation match dummy variable. The third model disaggregated the training-occupation match variable into three dummy variables: civilian training-occupation match,

military training-occupation match, and both military and civilian training matched occupation.

The results of their first model showed that a combination of military and civilian training increased earnings 24 percent, military training increased earnings 21 percent, and civilian training increased earnings 11 percent. The results of the second model showed that the matching variable was statistically significant, but the three training variables used in the first model became statistically insignificant. The results of the third model showed that only the military training-occupation match and interaction variables were statistically significant.

The use of dummy variables to represent training received gives equal weight to training periods regardless of their duration. That is, a respondent who completed an apprenticeship program, which may take longer than a year to accomplish, is not distinguished from a respondent who may have dropped out of a vocational-technical school after one month. The effect of type of occupation on earnings is not captured in the models used by Mangum and Ball. This has been found to drastically reduce the effect of training and training-occupation match on earnings when included.

In the third study that was reviewd, Hotchkiss concluded that "when the type of occupation is included, nearly all the effects on wage are associated with occupation and not with training nor with training related occupation." [Ref. 6, p.

482] The Hotchkiss study analyzed the effects of training, occupation, and training-occupation match on wages. Though this study focused on the effect of secondary vocational training on the wage of the first job obtained in the two years immediately after high school and not military training, it does show the significance of including type of occupation into an earnings analysis. The sample used was drawn from the High School and Beyond survey. [Ref. 6]

Ordinary Least Squares (OLS) regression analysis was performed on three models, with the natural logarithm of wages as the dependent variable. Hotchkiss classified both training and occupation into two broad categories; business support and trade and industry. All models used as explanatory variables a vector of control variables, a dummy variable equal to one if the respondent had received business support training, and a dummy variable equal to one if the respondent had received trade and industry training. The second model added training-occupation dummy variables equal to one if the respondent's occupation was in the same category as his/her training. The third model added dummy variables for the two categories of occupation.

The results of the first model, which omitted the terms for training relatedness and occupation, showed that trade and industry training was significant only for those who attended some postsecondary school. Business support training was

significant only for females who never attended postsecondary school.

The addition of training-occupation dummy variables in the second model altered the significance of the training variables. The results showed that business support training became insignificant in all cases, and trade and industry training became significant only for males. Training related to occupation was significant in most cases.

The occupation variables used in the third model resulted in all the training-occupation variables becoming insignificant. The only variable that was statistically significant besides the occupation variables was the trade and industry training variable for those who attended some postsecondary school.

A weakness of this study is the use of only two categories of training and occupation. The two categories are extremely specific and do not include numerous types of training and occupations. A dummy variable that matches training to occupation may equal one in this analysis, even though the training may be only remotely connected with the occupation.

The Lynch [Ref. 7] study analyzed the effect of private sector training on the 1983 earnings of noncollege graduates without military service. The sample was drawn from the NLSY survey. OLS regression analysis was performed on three models, with the natural logarithm of wages as the dependent variable. The explanatory variables used in the first model

captured the effects of education, accumulated human capital, personal characteristics, and labor market environment on earnings. The second model added variables to account for the duration, type, and completion of private sector training. The third model added industry and occupation dummy variables.

The results of the first model showed that the effects of all explanatory variables on earnings were significant, with the exception of number of jobs. Weeks of previous apprenticeship, weeks of previous off-the-job training, weeks of uncompleted on-the-job training for the current job, weeks of completed on-the-job training for the current job, and weeks of uncompleted apprenticeship for the current job were statistically significant in the second model. Weeks of completed on-the-job training for the current job, and weeks of uncompleted apprenticeship for the current job became insignificant with the addition of industry and occupation dummy variables in the third model.

Some of the results in this analysis seem implausible. The results of the second model showed that weeks trained to complete an apprenticeship for the current job was insignificant, while the weeks trained in an uncompleted apprenticeship was significant. The results of the third model showed that the effect of uncompleted weeks of on-the-job training for the current job on earnings is greater than the affect completed weeks of on-the-job training for the current job on earnings.

III. METHODOLOGY

A. THE SAMPLE

The main portion of the sample used for the analysis in this thesis was created by first attempting to replicate the NLSY sample used by Lynch [Ref. 7]. The Lynch sample used only nonveterans and those not currently on active duty. Once the replication of the Lynch sample was accomplished, veterans were added to create the final thesis sample.

Four criteria were applied to replicate the Lynch sample of 1983 respondents: (1) active duty military personnel (as of 1983) and those who left active duty prior to their end of obligated service (EAOS) were deleted; (2) college graduates were deleted; (3) those who attended school (e.g., elementary, junior high or high school) or attended college full-time after the 1980 interview date were deleted; and (4) only nonveterans who reported a wage observation for 1980 and 1983 were kept in the sample. The veterans added to the sample were those who had left active duty on or after their EAOS date. Only veterans with a wage observation for 1983 were kept. These restrictions produced a final sample size of 3,521, of which 483 are veterans. The number of deletions that resulted from applying each successive restriction are shown in Table 1.

TABLE 1. NUMBER DELETED FROM SAMPLE BY CRITERIA

Restrictions	Replicated Sample[a]		Final Sample[b]	
	Number Deleted	Remaining Sample Size	Number Deleted	Remaining Sample Size
Original NLSY sample	0	12686	0	12686
Active duty military and those who left active duty prior to EAOS date	594	12092	594	12092
Veterans	852	11240	0	12092
College graduates as of 1983 interview date	760	10480	768	11324
Did not complete school by 1980 interview date	5266	5214	5483	5841
No wage observation for 1980 or 1983 (1983 only for veterans)	2176	3038	2320	3521

Notes: [a]Replication of sample in Lynch (1992)
[b]Sample used for this thesis

The smallest group deleted from the sample were the members of the armed forces still on military active duty and service members who left active duty prior to their EAOS dates (i.e., who attrited). The restriction of no college graduates reduced the sample by only 768. This small number of deletions is explained by the young age of the NLSY survey respondents. Eliminating those who had not completed school by 1980 was a major restriction, which reduced the sample by 5,483. One reason Lynch imposed these restrictions was to ensure that her sample contained only participants in the labor market who were not simultaneously receiving formal

schooling. Again, this large loss of observations is due to a large portion of respondents in the NLSY still being relatively young as of 1980 (ages 15-22).

Because of the use of different methods for obtaining common variables, there was a slight difference in the size of Lynch's sample and the replicated sample in this thesis. As Table 2 shows, the replicated sample in the thesis contained 26 fewer observations, a difference of 0.008. Table 2 shows the descriptive statistics for the variables in the original Lynch study and for those obtained in the replication of her sample. As Table 2 shows, the mean values of most variables are very similar. The major exceptions are the percent married, the number with on-the-job training, and the number with off-the-job training, which are greater for the final thesis sample than the original Lynch sample.

Descriptive statistics for the full thesis sample, the veteran subsample, and the nonveteran subsample are shown in Table 3, Table 4, and Table 5, respectively. Veterans, having served on active military duty, have spent less time in the private sector job market than nonveterans. Thus, the mean values of variables describing private sector employment tend to be less for veterans than for nonveterans. For example, veterans have about 21 fewer months of labor force experience and 12 fewer months of tenure on the current job.

Though the amount of private sector training is less for veterans than for nonveterans, a larger percent of veterans

TABLE 2. DESCRIPTIVE STATISTICS OF NLSY VARIABLES FROM ORIGINAL LYNCH SAMPLE AND REPLICATED SAMPLE IN THESIS

Variable[a]	Lynch[b]	Thesis
Wage, 1983	$5.59	$5.74
Percentage male	55	53
Percentage nonwhite	21	25
School years	11.97	11.67
Tenure in 1983 weeks	99.48	107.48
Total experience in 1983 (weeks)	192.63	190.15
Percentage unemployment rate	10.01	11.6
Percentage residing in SMSA	71.7	70.9
Percentage healthy	95.8	96.1
Percentage married	29.4	41.1
Number with on-job training (percent)	128 (4.2)	184 (6.1)
Number with off-job training (percent)	450 (14.7)	611 (20.1)
Number apprenticed (percent)	54 (1.8)	63 (2.1)
Duration of on-the-job training, in weeks (of those with on-the-job training)	31.15	25.03
Duration of off-the-job training, in weeks (of those with off-the-job training)	40.90	42.59
Duration of apprenticeship, in weeks (of those with apprenticeship)	63.46	63.42
Sample size	3064	3038

[a]Means or proportions.
[b]Source: Lisa M. Lynch, *Private-Sector Training and the Earnings of Young Workers*, American Economic Review, March 1992, pp. 302

TABLE 3. DESCRIPTIVE STATISTICS OF VARIABLES FOR FULL THESIS SAMPLE (INCLUDES VETERANS)

Variable	Value[a]	Standard Deviation
Wage, 1983	$5.78	2.92
Percent male	56.5	0.5
Percent nonwhite	24.9	0.4
Years of school	11.7	1.7
Tenure on current/most recent job, in weeks	100.6	86.8
Total experience on private sector jobs, in weeks	178.5	66.8
Unemployment rate	11.7	32.1
Percent living in SMSA	71.9	45.0
Percent healthy	96.3	18.9
Percent married	41.7	49.3
Percent union	18.9	39.2
Number of jobs ever held	4.3	2.7
% with private sector on-the-job training	6.4	24.5
% with private sector off-the-job training	20.7	40.5
% with private sector apprenticeship	2.0	13.9
Weeks of private sector on-the-job training (of those with private sector on-the-job training)	23.1	30.3
Weeks of private sector off-the-job training (of those with private sector off-the-job training)	41.8	39.6
Weeks of private sector apprenticeship (of those with apprenticeship)	59.7	61.5
Weeks of formal military training	1.3	5.0
Weeks of military on-the-job training	2.0	9.8
Total weeks of all private sector training	11.4	29.0
Total weeks of all military training	3.3	12.9
Percent in professional occupation	4.4	20.6
Percent in technical occupation	2.8	16.4

TABLE 3. (continued) DESCRIPTIVE STATISTICS OF VARIABLES FOR FULL THESIS SAMPLE (INCLUDES VETERANS)

Variable	Value[a]	Standard Deviation
Percent in sales occupation	8.5	28.0
Percent in administrative occupation	18.8	34.1
Percent in service occupation	21.0	40.7
Percent in craft occupation	13.4	34.1
Percent in operator-machine occupation	12.2	32.8
Percent in operator-moving occupation	8.5	28.0
Percent in operator-labor occupation	8.7	28.3
Sample size	3521	

[a]Mean values, unless otherwise indicated.

have had private sector on-the-job training (9.3 percent versus 6.0 percent) and private sector off-the-job training (24.2 percent versus 20.1 percent), while the percentage of nonveterans and veterans with a private sector apprenticeship is fairly close (1.4 percent for veterans, versus 2.0 percent for nonveterans). Of course, a much higher percentage of veterans are male (78.5 percent versus 55 percent).

The largest differences in occupations between veterans and nonveterans are in administrative and craft occupations. Fewer veterans (12.0 percent) are in administrative occupations as compared to nonveterans (19.9 percent), while more veterans (18.8 percent) are in craft occupations as compared to nonveterans (12.5 percent).

TABLE 4. DESCRIPTIVE STATISTICS OF VARIABLES FOR VETERAN SUBSAMPLE IN THESIS

Variable	Value[a]	Standard Deviation
Wage, 1983	$6.06	3.18
Percent male	78.5	41.4
Percent nonwhite	21.7	41.3
Years of school	11.9	1.0
Tenure on current/most recent job, in weeks	57.1	53.4
Total experience on private sector jobs, in weeks	105.3	61.7
Unemployment rate	12.2	32.7
Percent living in SMSA	78.2	14.3
Percent healthy	97.9	14.3
Percent married	45.1	49.8
Percent union	18.6	39.0
Number of jobs ever held	3.6	2.5
% with private sector on-the-job training	9.3	29.1
% with private sector off-the-job training	24.2	42.9
% with private sector apprenticeship	1.4	12.0
Weeks of private sector on-the-job training (of those with any private sector on-the-job training)	15.1	16.4
Weeks of private sector off-the-job training (of those with any private sector off-the-job training)	37.4	42.9
Weeks of private sector apprenticeship (of those with any private sector apprenticeship)	30.3	46.3
Weeks of formal military training	9.6	10.1
Weeks of military on-the-job training	14.5	22.8
Total weeks of all private sector training (for all respondents)	11.1	28.1

TABLE 4. (continued) **DESCRIPTIVE STATISTICS OF VARIABLES FOR VETERAN SUBSAMPLE IN THESIS**

Variable	Value[a]	Standard Deviation
Total weeks of all military training	24.1	26.6
Percent in professional occupation	4.3	20.4
Percent in technical occupation	3.3	17.9
Percent in sales occupation	6.0	23.8
Percent in administrative occupation	12.0	32.5
Percent in service occupation	20.5	40.0
Percent in craft occupation	18.8	39.1
Percent in operator-machine occupation	14.5	35.2
Percent in operator-moving occupation	6.0	23.8
Percent in operator-labor occupation	11.0	31.3
Sample size	483	

[a]Mean values, unless otherwise indicated.

TABLE 5. DESCRIPTIVE STATISTICS OF VARIABLES FOR NONVETERAN SUBSAMPLE IN THESIS

Variable	Value[a]	Standard Deviation
Wage, 1983	$5.73	2.88
Percent male	53.1	49.9
Percent nonwhite	25.4	49.9
Years of school	11.7	1.7
Tenure on current/most recent job, in weeks	107.5	89.0
Total experience on private sector jobs, in weeks	190.1	59.8
Unemployment rate	11.6	32.1
Percent living in SMSA	70.9	45.4
Percent healthy	96.1	19.5
Percent married	41.1	49.2
Percent union	19.0	39.2
Number of jobs ever held	4.5	2.7
% with private sector on-the-job	6.0	23.7
% with private sector off-the-job training	20.1	40.1
% with private sector apprenticeship	2.7	14.1
Weeks of private sector on-the-job training (of those with any private sector on-the-job training)	25.0	32.6
Weeks of private sector off-the-job training (of those with any private sector off-the-job training)	42.6	38.9
Weeks of private sector apprenticeship (of those with any private sector apprenticeship)	63.4	62.4
Weeks of formal military training	-	-
Weeks of military on-the-job training	-	-
Total weeks of all private sector training (for all respondents)	11.4	29.1
Total weeks of all military training	-	-
Percent in professional occupation	4.4	20.6
Percent in technical occupation	2.7	16.1
Percent in sales occupation	9.0	28.6
Percent in administrative occupation	19.9	39.9
Percent in service occupation	21.0	40.8

TABLE 5. (continued) **DESCRIPTIVE STATISTICS OF VARIABLES FOR NONVETERAN SUBSAMPLE IN THESIS**

Variable	Value[a]	Standard Deviation
Percent in craft occupation	12.5	33.1
Percent in operator-machine occupation	11.9	32.4
Percent in operator-moving occupation	5.5	22.7
Percent in operator-labor occupation	8.4	27.7
Sample size	3038	

[a]Mean value, unless otherwise indicated.

Veterans, on average, received nearly the same amount of private sector training as did nonveterans (11.1 weeks versus 11.4 weeks). In addition, veterans received an average of 24.1 weeks of total military training, not including basic training ("boot camp"), for a total of 35.2 weeks of private sector and military training combined, whereas nonveterans with no military training received an average of 11.4 weeks of total training.

B. THE EXPLANATORY VARIABLES

The focus of this thesis is the effect of military and private sector training on civilian earnings, independent of other determinants. The explanatory variables used in the earnings models are taken from the Lynch study [Ref. 7]. The explanatory variables used in the earnings models are defined in Table 6. Several variables are used to account for employment factors. These variables are weeks of tenure on the current job as of 1983 (TENURE), weeks of total work experience in the private sector (EXPER), a dummy variable for

TABLE 6. DEFINITIONS OF EXPLANATORY VARIABLES IN EARNINGS MODELS, AND EXPECTED SIGNS

Variable	Definition	Expected Sign
	DEPENDENT VARIABLE	
LNWAGE83	Natural log of respondents' 1983 wage	
	HUMAN CAPITAL AND DEMOGRAPHIC VARIABLES	
TENURE	Weeks of tenure on current/most recent job	+
EXPER	Total weeks of civilian employment	+
SCHOOL	Years of school completed	+
UNEMPLOY	Unemployment rate of area of residence	+
SMSA	Standard metropolitan statistical area	+
MALE	1 if male 0 if female	+
NONWHITE	1 if nonwhite 0 if white	-
HEALTHY	1 if healthy 0 if not healthy	+
MARRIED	1 if married 0 if not married	+
UNION	1 if member of a labor union 0 if not	+
NOJOBS	Number of jobs ever held	+
	PRIVATE SECTOR TRAINING VARIABLES	
PREOJT	Weeks of on-the-job training which began prior to current/most recent job	+
PREOFF	Weeks of apprenticeship training which began prior to current/most recent job	+
PREOFF	Weeks of off-the-job training which began prior to current/most recent job	+
UNCOMOJT	Weeks of uncompleted on-the-job training at current/most recent job	?

TABLE 6. (continued) **DEFINITIONS OF EXPLANATORY VARIABLES IN EARNINGS MODELS, AND EXPECTED SIGNS**

Variable	Definition	Expected Sign
COMPOJT	Weeks of completed on-the-job training at current/most recent job	+
UNCOMAPP	Weeks of uncompleted apprenticeship training at current/most recent job	?
COMPAPP	Weeks of completed apprenticeship training at current/most recent job	+
CURROFF	Weeks of off-the-job training since beginning of current/most recent job	+
	MILITARY TRAINING VARIABLES	
MILFORML	Weeks of formal military training	+
MILOJT	Weeks of military on-the-job training	+
	AGGREGATE TRAINING VARIABLES	
TOTLCIV	Total weeks of previous and completed private-sector training (PREOJT + PREAPP + PREOFF + COMPOJT + COMPAPP + CURROFF)	+
TOTLMIL	Total weeks of military training (MILFORML + MILOJT)	+
	COMPLIMENTARITY VARIABLE	
MILCIV	1 if product of TOTLMIL and TOTLCIV is greater than zero 0 if not	?
	OCCUPATION DUMMY VARIABLES	
PROFESS	1 of managerial and professional specialty 0 if not	+
TECH	1 if technical 0 if not	+
SALES	1 if sales worker 0 if not	+
ADMIN	1 if administrative support or clerical 0 if not	+
SERVICE	1 if service worker 0 if not	+

TABLE 6. (continued) DEFINITIONS OF EXPLANATORY VARIABLES IN EARNINGS MODELS, AND EXPECTED SIGNS

Variable	Definition	Expected Sign
CRAFT	1 if precision production, craft or repair 0 if not	+
OPMACHN	1 if machine operator, assembler or inspector 0 if not	+
OPMOVNG	1 if operator-transportation or material moving 0 if not	+
FARMING	1 if farming, forestry or fishing worker 0 if not	+

membership in a union (UNION), and number of jobs ever held (NOJOBS). Formal education is based on years of schooling (SCHOOL). Geographic location is captured by a dummy variable for living in a metropolitan area (SMSA), and the local unemployment rate (UNEMPLOY). Demographic characteristics are captured by dummy variables for gender (MALE = 1), race (NONWHITE = 1), health limitations (HEALTHY = 1), and marital status (MARRIED = 1).

All of the explanatory variables are expected to positively affect earnings, except UNEMPLOY, NONWHITE and NOJOBS. UNEMPLOY is expected to be negatively associated with earnings since employers tend to pay lower wages when the local unemployment rate is high. Historically, nonwhites earn less than whites, and therefore NONWHITE was expected to negatively affect earnings. A high value for NOJOBS may

indicate a respondent's frequent firings from jobs or lack or desire to stay on one job for any length of time. Therefore, NOJOBS was expected to affect earnings negatively.

The four types of training explanatory variables used are private sector training, military training, aggregate training and complimentary training. Private sector training is further broken down into on-the-job training, off-the-job training and apprenticeship. Each of these classifications is categorized according to whether the training was for a previous job or not. The variables for training received prior to the current/most recent job are weeks of previous on-the-job training (PREOJT), weeks of previous apprenticeship (PREAPP), and weeks of previous off-the-job training (PREOFF).

Training received during the current/most recent job is further classified into training that was complete or incomplete. These variables are weeks of uncompleted on-the-job training (UNCOMOJT), weeks of completed on-the-job training (COMPOJT), weeks of uncompleted apprenticeship (UNCOMAPP), and weeks of completed apprenticeship (COMPAPP). The weeks of off-the-job training received during the current/most recent job variable (CURROFF) combines both completed and uncompleted training. This breakdown of private sector training allows the comparison of the earnings effects of military training with the effect of the various private sector training categories. All private sector training variables were expected to positively affect earnings, except

the uncompleted training variables, for which no prior hypotheses of sign or magnitude could be formulated.

Military training was separated into two categories: weeks of formal/classroom training (MILFORML) and weeks of on-the-job training (MILOJT). The null hypothesis is that military training will not affect civilian earnings, unless non-military specific skills are being learned.

The aggregate training variables are measured as total weeks of all private sector training received prior to current/most recent job, weeks of completed private sector training for current/most recent job and weeks of all off-the-job training for current/most recent job (TOTLCIV)[1] and total weeks of formal military training and military on-the-job training (TOTLMIL). The complimentarity dummy variable (MILCIV) is defined for veterans and is equal to one if the product of total civilian training (TOTLCIV) and total military training (TOTLMIL) is greater than zero, and equal to zero otherwise.

The effect of type of occupation on earnings is accounted for through the use of occupational dummy variables. The occupational dummy variables were chosen from available occupational categories in the NLSY, which are divided into ten categories based on the 1980 three-digit Census occupation

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[1]The variable TOTLCIV differs from the variable "total weeks of all private sector training" in Tables 3, 4 and 5, in that it does not include uncompleted training.

codes. Dummy variables for nine categories are included in the earnings equations. These occupations are: managerial and professional specialties (PROFESS), technical (TECH), sales worker (SALES), administrative support or clerical (ADMIN), service worker (SERVICE), precision production, craft or repair (CRAFT), machine operator, assembler or inspector (OPMACHN), transportation operator or material moving (OPMOVNG), and farming, forestry and fishing (FARMING). The handler, helper and laborer occupation serves as the omitted occupation category in this analysis. All the occupational dummy variables were expected to positively affect earnings since each descriptive statistic indicated has a higher mean earnings than the base category. Table 6 shows the expected signs of the coefficients of the explanatory variables.

C. THE MODELS

Ordinary least square (OLS) regression analysis was used to estimate six different semi-log earnings models. The natural logarithm of the 1983 wages was the dependent variable for the models. Models based on the full sample used 3286 observations due to 235 observations having missing values. Models based on the veteran subsample used 435 observations due to 48 observations having missing values, and models based on the nonveteran subsample (replicated Lynch sample) used 2,851 observations due to 187 observations having missing values.

The first two estimated models represented an attempt to replicate the data file and empirical results in the Lynch study [Ref. 7]. The Lynch regression models were recreated using the model specifications shown below in formulas (1) and (2),

$$y_i = \alpha + \beta X + \mu_i \quad (1)$$

$$y_i = \alpha + \beta X + \theta P + \mu_i \quad (2)$$

where y is the natural log of 1983 wages, α is the intercept, β and θ are vectors of coefficients to be estimated, μ is the disturbance, X represents a vector of explanatory variables and P is a vector of private sector training variables. The explanatory variables in the X and P vectors are defined in Table 6. The models were first estimated using the replicated Lynch sample described in section A of this chapter.

The results reported in Lynch's original paper are reproduced in the first two columns of Table 7. The results of the replication attempt in this thesis are reported in the last two columns of Table 7. The results indicate that most of the estimated coefficients had the same sign and magnitude in the replication attempt (column iii) as in the Lynch study (column i). The main exception was the variable NOJOBS, which was negative and insignificant in the Lynch study, but positive and significant (at the 0.10 level) in the thesis

TABLE 7. COMPARISON OF MODEL (1) ORIGINAL OLS ESTIMATES FROM LYNCH STUDY AND REPLICATED SAMPLE IN THESIS

Variable	Original Lynch Results[a]		Replicated Results	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.70	8.76*	0.05	4.01*
TENURE	0.0006	5.66*	0.0009	7.39*
EXPER	0.0018	11.91*	0.0016	10.38*
SCHOOL	0.13	5.36*	0.05	10.40*
UNEMPLOY	-0.007	-3.63*	-0.008	-3.30*
SMSA	0.07	4.53*	0.16	5.40*
MALE	0.16	11.28*	0.24	14.35*
NONWHITE	-0.09	-5.18*	-0.08	-4.17*
HEALTHY	0.16	2.23**	0.13	3.13*
MARRIED	0.08	4.99*	0.05	3.06*
UNION	0.23	12.55*	0.22	10.52*
NOJOBS	-0.001	-0.53	0.006	1.77***
R-squared	0.25		0.26	
Prob > F	not given		0.0001	
Sample Size	3064		2851	

[a]Source: Lisa M. Lynch, *Private-Sector Training and the Earnings of Young Workers*, American Economic Review, March 1992

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

estimates. The significance of the variables, as given by the t-statistics in columns (ii) and (iv), are comparable. One minor exception is the coefficient of HEALTHY, which is significant at the 0.05 level in the Lynch study, but significant at the 0.01 level in the replication.

When the private training variables are included, model (2), and Lynch's results compared to the replication, a number of differences emerge. These results are shown in Table 8. Among the most interesting differences, the Lynch study indicated that an uncompleted apprenticeship (UNCOMAPP) was more significant (significant at the 0.05 level versus at the 0.10 level) and more effective in increasing wages (coefficient of 0.003 versus 0.002) than a completed apprenticeship (COMPAPP). This effect of apprenticeship training did not appear to be plausible, and the results in this thesis were the opposite of Lynch's: an uncompleted apprenticeship was less significant (significant at 0.10 versus 0.05) and less effective in increasing wages (coefficient of 0.002 versus 0.003) than a completed apprenticeship. The result in this thesis seems intuitively more plausible than Lynch's; one should expect that pay would be greater when an apprenticeship is completed than when it is uncompleted. This result also lends some support to the accuracy of the data definitions used to construct the sample used in this thesis, even though the Lynch sample was not perfectly replicated.

TABLE 8. COMPARISON OF MODEL (2) ORIGINAL OLS ESTIMATES OF LYNCH STUDY AND REPLICATED SAMPLE IN THESIS

Variable	Original Lynch Results[a]		Replicated Results	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.72	8.96*	0.38	4.44*
TENURE	0.0007	5.97*	0.0009	7.46*
EXPER	0.0017	11.68*	0.0016	10.27*
SCHOOL	0.03	5.03*	0.05	9.66*
UNEMPLOY	-0.002	-3.74*	-0.009	-3.40*
SMSA	0.10	4.43*	0.10	5.35*
MALE	0.15	10.91*	0.22	13.81*
NONWHITE	-0.08	-4.80*	-0.07	-4.03*
HEALTHY	0.09	2.58*	0.13	3.14*
MARRIED	0.07	4.72*	0.05	2.99*
UNION	0.22	12.07*	0.21	10.14*
NOJOBS	-0.002	-0.66	0.007	1.82***
PREOJT	0.0018	0.43	0.0015	1.24
PREAPP	0.005	4.28*	0.0032	3.97*
PREOFF	0.002	5.00*	0.0010	2.57*
COMPOJT	0.003	2.70*	0.0047	2.64*
UNCOMOJT	0.004	2.32**	0.0018	1.14
UNCOMAPP	0.003	2.49**	0.0023	1.75***
COMPAPP	0.002	1.66***	0.0031	2.24**
CURROFF	0.0002	0.27	-0.0002	-0.31
R-squared	0.27		0.27	
Prob > F	not given		0.0001	
Sample Size	3064		2851	

[a]Source: Lisa M. Lynch, *Private-Sector Training and the Earnings of Young Workers*, American Economic Review, March 1992

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

The only other variable that differs significantly is uncompleted on-the-job training for current/most recent job (UNCOMOJT). Lynch found that uncompleted on-the-job training for the current/most recent job was statistically significant with a coefficient of 0.004. In the replication attempt, the coefficient of UNCOMOJT was only 0.001, and it was insignificant. Furthermore, Lynch found the coefficient of weeks of uncompleted on-the-job training greater than the coefficient of completed on-the-job training. This thesis found the reverse to be true which, again, appears to be a more plausible result.

Once the Lynch study was replicated satisfactorily, models (1) and (2) were analyzed separately for: (a) the full sample, (b) the veteran subsample, and (c) the nonveteran subsample. Model (2) was analyzed separately using the full sample and the nonveteran subsample. The explanatory variable COMPAPP was omitted from model (2) when analyzed for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

Next, the military training variables were added to model (2) to create the specification of model (3), and analyzed using the full sample and veteran subsample. This allowed for a comparison of effects of private sector training and military training on earnings. The explanatory variable COMPAPP was omitted from the model for the veteran subsample because no veterans in the sample had completed a private

sector apprenticeship. This model was not analyzed using the nonveteran subsample due to nonveterans not having any military training. Model (3) was specified as follows:

$$y_i = \alpha + \beta X + \theta P + \delta M + \mu_i \qquad (3)$$

where δ is a vector of coefficients to be estimated and M is a vector of military training variables, which include weeks of formal (classroom) military training and weeks of military on-the-job training.

Model (4) uses the Lynch explanatory variables, but replaces the specific categories of private sector training and military training variables with one aggregated private training variable and one aggregated military training variable. This model is analyzed using the full sample and then separately for the veteran subsample. The model is then analyzed for the nonveteran subsample with the explanatory variable TOTLMIL omitted from the model, and then analyzed again for the veteran subsample but with the explanatory variable TOTLCIV omitted from the model. This is done in order to analyze how the payoff to military training for veterans compares to the payoff to civilian training for nonveterans. Model (4) is specified as:

$$y_i = \alpha + \beta X + \lambda A + \mu_i \quad (4)$$

where λ and ρ are vectors of coefficients to be estimated, A is a vector of the aggregate training variables, which include total weeks of private sector training and total weeks of military training, and C is the military/private sector training interaction variable.

Model (5) is similar to model (4) in that it included the Lynch explanatory variables, the aggregated training variables, and is analyzed using the full sample and then separately for the veteran subsample. In addition, an interaction variable was added to capture any complimentarity between private and military training. The complimentarity variable is included to analyze whether a veteran is better off with a combination of private sector and military training or with just one type of training. This allows for an estimate of the direct effects of aggregate military training and aggregate private sector training, and a test of whether the interaction term results in a significant improvement in the model. Model (5) is specified as:

$$y_i = \alpha + \beta X + \lambda A + \rho C + \mu_i \quad (5)$$

Model (6) uses the Lynch explanatory variables, the aggregate training variables and the occupation dummy variables to test for whether the inclusion of type of occupation alters the effect of training on earnings. Model (6) was estimated for the full sample and veteran subsample, and is specified as:

$$y_i = \alpha + \beta X + \lambda A + \phi O + \mu_i \qquad (6)$$

where ϕ is a vector of coefficients to be estimated and O is a vector of nine dummy occupation variables.

Model (7) differs from model (6) by including Lynch's explanatory variables (X), and the occupation dummy variables (O), but the original military and private training variables (P, M) are substituted for the aggregate training variables (A). Model (7) is estimated for the full sample and veteran subsample. Model (7) is specified as:

$$y_i = \alpha + \beta X + \theta P + \delta M + \phi O + \mu_i \qquad (7)$$

This model is used to test the significance of the various types of private sector and military training when the effects

of type of occupation are taken into account. All variables are discussed in section B of this chapter and defined in Table 6.

IV. EMPIRICAL RESULTS

This chapter presents and discusses the results of the seven models discussed in the previous chapter.

A. MODEL (1)

Model (1) analyzes the effects of the demographic explanatory variables on earnings prior to adding training and occupational variables to the model. Table 9 presents the estimated coefficients and t-values of model (1) for the full thesis sample (which includes veterans) and for the veteran and nonveteran subsamples. The results of model (1) differ significantly between the veteran and nonveteran subsamples. The coefficients in column (ii) of Table 9, based on the full thesis sample that includes veterans, can be compared to those in column (iii) in Table 7, which omits the veterans from the full sample. The differences between the two results are slight. The major exception is the coefficient of number of jobs (NOJOBS), which is positive and significant (at the 0.10 level) when veterans are omitted, but negative and insignificant when they are included. Also, the effect of tenure on the current job and overall experience are both smaller when veterans are included. These differences are

TABLE 9. OLS REGRESSION RESULTS FOR MODEL (1) FOR FULL SAMPLE (INCLUDES VETERANS) AND NONVETERAN AND VETERAN SUBSAMPLES

Variable	Full Sample		Nonveterans		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)	Coefficient (v)	t-Value (vi)
Intercept	0.43	5.21*	0.34	3.90*	0.27	0.89
TENURE	0.0008	8.96*	0.0009	7.44*	0.0004	0.60
EXPER	0.0012	8.96*	0.0017	10.30*	0.0020	3.63*
SCHOOL	0.05	11.57*	0.05	10.14*	0.08	4.08*
UNEMPLOY	-0.010	-4.29*	-0.008	-3.24*	-0.008	-1.15
SMSA	0.10	5.68*	0.10	5.18*	0.11	2.20**
MALE	0.26	16.46*	0.23	13.83*	0.25	5.16*
NONWHITE	-0.08	-5.24*	-0.08	-3.98*	-0.11	-2.31**
HEALTHY	0.13	3.20*	0.13	3.12*	0.02	0.17
MARRIED	0.06	3.84*	0.05	3.04*	0.06	1.60
UNION	0.23	11.98*	0.22	10.38*	0.31	5.95*
NOJOBS	-0.001	-0.32	0.007	1.79***	-0.018	-1.74***
R-squared	0.25		0.26		0.28	
Prob > F	0.0001		0.0001		0.0001	
Sample Size	3286		2851		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

highlighted when we compare the models estimated separately for the veterans and nonveterans. The effects of tenure on current/most recent job, local unemployment rate, health and marital status are insignificant for veterans, but significant for nonveterans, as shown in columns (vi) and (iv). Weeks of experience in the private sector, years of school completed, residence in an SMSA, gender, race, union membership and number of jobs held are statistically significant for both samples.

Nonveterans, on average, have been working at their current/most recent jobs approximately 50 weeks longer than veterans, 107.5 weeks as compared to 57.1 weeks. The smaller amount of tenure accrued by veterans, as compared to nonveterans, is explained in part by their limited time in the private sector job market, due to the time spent on active military duty. The relatively short amount of time veterans have spent on their current/most recent private sector jobs apparently has not increased their job-specific human stock enough to affect their earnings. The reverse appears to be true for nonveterans. It should be noted that the average tenure of nonveterans is nearly twice that of veterans.

The results in Table 9 indicate that years of schooling and membership in a labor union have a greater effect on veterans' earnings than they do on nonveterans' earnings. A union membership increases a veteran's earnings by 31 percent compared to only a 22 percent increase in earnings for a

nonveteran. An additional year of schooling increases a veteran's earnings 8 percent compared to an increase of 5 percent for a nonveteran. Since veterans in the sample have a limited amount of time in the private sector job market, the effect of variables dependent on time spent in the private sector job market (i.e., TENURE and EXPER) is relatively small.

The number of jobs a person has held may have different effects on earnings depending on the motivation for the job changes. On the one hand, job changes may reflect a person's inability to "hold down" a job, thus having an adverse effect on earnings. On the other hand a person may be moving from his/her present job to a better/higher paying job, thus creating a positive effect on earnings. The net effect will depend on which effect dominates. As Table 9 shows, the number of jobs a respondent has held, NOJOBS, is statistically significant for both veterans and nonveterans, but only at the 0.10 level. Interestingly, NOJOBS negatively affects earnings for veterans, but positively affects earnings for nonveterans. The negative outcome of changing jobs appears to dominate for veterans, while the opposite effect prevails for nonveterans. This may be because nonveterans have been in the job market longer and have accumulated more, and better, labor market information. Their job changes are likely to incorporate this information and, therefore, to be moves to better jobs. Veterans, on the other hand, have been in the private sector

a shorter amount of time and have accumulated less job information. The wage changes associated with their job changes may simply reflect this lack of information.

The results of model (1) did differ slightly when analyzed using the nonveteran subsample as compared with the results found for the full thesis sample. The effect of experience on earnings decreases with the inclusion of veterans in the sample. Column (iii) shows that earnings increase 0.17 percent per week of experience for nonveterans, whereas the increase is only 0.12 percent per week of experience for the full thesis sample, as shown in column (i). The number of jobs a respondent has had, NOJOBS, is statistically insignificant for the full thesis sample, whereas it is statistically significant for the nonveteran and veteran subsamples. The positive effect of NOJOBS for the nonveteran subsample and negative effect of NOJOBS for the veteran subsample become insignificant for the full thesis sample.

Being male and a member of a union have the greatest positive effects on earnings, and being nonwhite has the greatest negative effect on earnings for all three samples. The results indicate that a male earns 23-26 percent more than a female and a union member earns 22-31 percent more than a nonunion member. A nonwhite worker earns 8-11 percent less than a white worker.

B. MODEL (2)

Table 10 depicts the results of model (2), the natural logarithm of wages, as a function of demographic variables, and private sector training variables for the full thesis sample (including veterans), the nonveteran subsample, and the veteran subsample. The explanatory variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

The demographic variables in this model prove to be insensitive to the inclusion/exclusion of the private sector training variables. Demographic variables that are statistically significant/insignificant in model (1) are also statistically significant/insignificant in model (2), with the exception of NOJOBS, which is significant for the veteran subsample in model (1), but insignificant for the veteran subsample in model (2). The magnitudes of the estimated coefficients are consistent with model (1) as well.

On-the-job training is generally job-specific. That is, it enhances the skills and productivity of the trainee for the specific job the trainee currently holds, and is generally not transferable. This explains the result that completed on-the-job training for the current/most recent job (COMPOJT) had the greatest effect on earnings, 0.47 percent increase per week of training for the full sample and the nonveteran subsample, while previous on-the-job training (PREOJT) is insignificant

TABLE 10. RESULTS OF MODEL (2) FOR FULL SAMPLE (INCLUDES VETERANS), AND NONVETERAN AND VETERANS SUBSAMPLES

Variable	Full Sample		Nonveterans		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)	Coefficient (v)	t-Value (vi)
Intercept	0.47	5.68*	0.38	4.44*	0.26	0.83
TENURE	0.0008	6.95*	0.0008	7.46*	0.0020	0.65
EXPER	0.0012	8.72*	0.0016	10.27*	0.0020	3.61*
SCHOOL	0.05	10.88*	0.05	9.66*	0.08	3.95*
UNEMPLOY	-0.011	-4.47*	-0.009	-3.40*	-0.008	-1.30
SMSA	0.10	5.63*	0.09	5.35*	0.08	2.18**
MALE	0.25	15.99*	0.22	13.81*	0.25	5.19*
NONWHITE	-0.09	-5.15*	-0.07	-4.03*	-0.11	-2.29**
HEALTHY	0.10	3.22*	0.13	3.14*	0.04	0.31
MARRIED	0.06	3.79*	0.05	2.99*	0.06	1.42
UNION	0.23	11.64*	0.21	10.14*	0.38	5.95*
NOJOBS	-0.001	-0.34	0.007	1.82***	-0.017	-1.61
PREOJT	0.0018	1.12	0.0015	1.24	-0.0021	-0.40
PREAPP	0.0030	3.79*	0.0030	3.97*	-0.0010	-0.12
PREOFF	0.0009	2.63*	0.0016	2.57*	0.0021	1.68***
UNCOMOJT	0.0023	1.65***	0.0018	1.14	0.0055	1.41
COMPOJT	0.0047	2.63*	0.0047	2.64*	-0.0004	-0.05
UNCOMAPP	0.0021	1.70***	0.0023	1.75***	0.0016	0.54
COMPAPP	0.0029	2.12**	0.0031	2.24**	-[a]	-[a]
CURROFF	-0.00009	-0.14	-0.0002	-0.31	-0.0011	-1.26
R-squared	0.26		0.27		0.29	
Prob > F	0.0001		0.0001		0.0001	
Sample Size	3286		2851		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

[a]The explanatory variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

for all three samples. Apprenticeships are generally intense training periods of long duration teaching a difficult/ complicated skill, which is generally transferrable. A previous apprenticeship (PREAPP) and a completed apprenticeship for the current/most recent job (COMPAPP) had the next greatest affects on earnings for the full sample and the nonveteran sample: PREAPP increased earnings 0.30 percent per week of training for the full sample and 0.32 percent per week of training for the nonveteran subsample, while COMPAPP increased earnings 0.29 percent per week of training for the full sample, and 0.31 percent per week of training for the nonveteran subsample. Previous off-the-job training (PREOFF) is the only private sector training variable that is statistically significant for the veteran subsample.

C. MODEL (3)

Table 11 depicts the results of model (3), the natural logarithm of wages as a function of demographic variables, private sector training variables, and military training variables for the full thesis sample, and the veteran subsample. The explanatory variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

The addition of the military training variables changed the significance and effect of some demographic variables for the full sample slightly, as shown in the comparison of Tables

TABLE 11. RESULTS OF MODEL (3) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.40	4.92*	0.25	0.81
TENURE	0.0009	7.33*	0.0030	0.65
EXPER	0.0015	10.44*	0.0022	3.95*
SCHOOL	0.05	10.22*	0.07	3.39*
UNEMPLOY	-0.009	-3.92*	-0.007	-1.18
SMSA	0.05	5.55*	0.11	2.13**
MALE	0.08	14.86*	0.25	5.10*
NONWHITE	-0.08	-4.32*	-0.08	-1.68***
HEALTHY	0.13	3.30*	0.08	0.62
MARRIED	0.05	3.47*	0.06	1.44
UNION	0.23	11.68*	0.32	6.20*
NOJOBS	0.003	0.90	-0.015	-1.45
PREOJT	0.0013	1.15	-0.0022	-0.43
PREAPP	0.0030	3.92*	-0.0012	-0.15
PREOFF	0.0010	2.77*	0.0016	1.29
UNCOMOJT	0.0021	1.52	0.0046	1.21
COMPOJT	0.0047	2.66*	-0.0001	-0.01
UNCOMAPP	0.0021	1.72***	0.0016	0.51
COMPAPP	0.0030	2.20**	-[a]	-[a]
CURROFF	-0.0003	-0.54	-0.0012	-1.42
MILFORML	0.0097	5.43*	0.0059	2.87*
MILOJT	0.0015	1.72***	0.0006	0.72
R-squared	0.27		0.30	
Prob > F	0.0001		0.0001	
Sample Size	3286		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

[a]The explanatory variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

10 and 11. The variables dependent on the amount of time in the private sector job market (TENURE and EXPER) increased their significance and their effect on earnings slightly. The local unemployment rate, gender, race, and marital status (factors not dependent on amount of time in the private sector job market) decreased slightly in significance and their effects on earnings with the addition of the military training variables. The effect of private sector training on earnings also changed only slightly with the addition of the military training variables. Uncompleted on-the-job training for the current/most recent job (UNCOMOJT) became insignificant with the inclusion of military training variables.

The effect on earnings and statistical significance increased slightly for EXPER and decreased slightly for NONWHITE for the veteran subsample with the addition of the military training variables. The only private sector training variable that was significant for the veteran subsample in model (2) (PREOFF) became insignificant with the addition of the military training variables in model (3).

Formal military training, MILFORML, surpassed COMPOJT as having the greatest effect on earnings among the training variables for the full sample, and is the only significant training variable for the veteran subsample. MILFORML increases earnings 0.97 percent per week of training for the full sample (which is more than double the effect COMPOJT has on earnings), and 0.59 percent per week of training for the veteran subsample. Military on-the-job training, MILOJT, is statistically significant at the 0.10 level and increases

earnings 0.15 percent per week of training, ranking seventh of the ten categories of training in effectiveness on earnings for the full sample, but is insignificant for the veteran subsample. Formal military training has a much greater effect on post-service earnings than military on-the-job training because formal military training is more transferable. For example, in a Navy "A" school (a formal school lasting several weeks to several months depending upon the subject taught) teaching hydraulics, a trainee would learn about the function and repair of hydraulic systems in general. Once the trainee graduated from "A" school and transferred to the "fleet," he would receive on-the-job training on the particular hydraulic system used in that command. Hence, like civilian on-the-job training, military on-the-job training tends to be job-specific and less transferable than formal training.

D. MODEL (4)

The results of model (4), the natural logarithm of wages as a function of demographic variables and aggregate training variables, are shown in Table 12 for the full thesis sample and the veteran subsample. The demographic variables for the full thesis sample, columns (i) and (ii), are consistent with the previous models for the full thesis sample. The aggregate private sector training variable, (TOTLCIV), and the aggregate military training variable, (TOTLMIL), are highly significant and positive for the full thesis sample. Somewhat

TABLE 12. RESULTS OF MODEL (4) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-Values (ii)	Coefficient (iii)	t-Values (iv)
Intercept	0.40	4.89*	0.25	0.81
TENURE	0.0009	7.35*	0.0003	0.55
EXPER	0.0015	10.18*	0.0022	3.91*
SCHOOL	0.05	4.48*	0.06	3.79*
UNEMPLOY	-0.009	-3.90*	-0.006	-0.90
SMSA	0.10	5.65*	0.04	2.28**
MALE	0.06	15.31*	0.24	4.94*
NONWHITE	-0.08	-4.48*	-0.09	-1.85***
HEALTHY	0.13	3.30*	0.04	0.28
MARRIED	0.06	3.58*	0.04	1.61
UNION	0.23	11.84*	0.31	6.02*
NOJOBS	0.002	0.58	-0.017	-1.70***
TOTLCIV	0.0012	4.34*	-0.0002	-0.33
TOTLMIL	0.0035	5.54*	0.0018	2.31**
R-squared	0.26		0.29	
Prob > F	0.0001		0.0001	
Sample Size	3286		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

surprisingly, the effect of total military training on earnings, for the full thesis sample, is nearly three times the effect of total private sector training. TOTLMIL increases earnings 0.35 percent per week of training, whereas TOTLCIV increases earnings only 0.12 percent per week of training.

The magnitude of the estimated coefficients and significance levels for the demographic variables of model (4) for the veteran subsample are consistent with the previous model analyzed for the veteran subsample, model (1). Again, the demographic variables are not sensitive to the addition of the aggregate training variables for the veteran subsample. The results of model (4), shown in Table 12, indicate that tenure, local unemployment rate, health and marital status are statistically insignificant for the veteran subsample, as they were for model (1), shown in Table 9. The one exception in the similarity between the results of model (1) and model (4) for the veteran subsample is the explanatory variable NONWHITE. The inclusion of the aggregate training variables decreased the significance level of NONWHITE from the 0.05 level to the 0.10 level, and decreased the effect of NONWHITE on earnings from an 11 percent decrease in earnings for nonwhites to a 9 percent decrease in earnings.

The effect of total military training, TOTLMIL, on earnings for veterans is only half of what it is for the full thesis sample; 0.35 percent increase in earnings per week of training for the full thesis sample as compared to 0.18 percent increase in earnings per week of training for

veterans. This indicates the high value that private sector employers place on military training.

Interestingly, the effect of total private sector training, TOTLCIV, on earnings is statistically insignificant for the veteran subsample, as shown in column (iv) of Table 12.

Model (4) was modified such that the payoff to military training for veterans could be compared to the payoff to civilian training for nonveterans. The results are shown in Table 13. The estimated coefficient of total military training (TOTLMIL) for veterans is significant at the 0.05 level, whereas the estimated coefficient of total civilian training (TOTLCIV) for nonveterans is significant at the 0.01 level. TOTLMIL increases the earnings of veterans by 0.18 percent per week of training, while TOTLCIV increases the earnings of nonveterans by 0.14 percent per week of training. Thus, the relative payoff to each type of training appears to be similar.

E. MODEL (5)

The results of model (5), the natural logarithm of wages as a function of demographic variables, aggregate training variables, and a complimentarity variable are shown in Table 14 for the full thesis sample and the veteran subsample. The inclusion of the complimentarity variable has no significant effect on the model. The estimated coefficients and significance levels of the demographic variables, private sector training variables, and military training variables are

TABLE 13. RESULTS OF MODIFIED MODEL (4) FOR NONVETERAN AND VETERAN SUBSAMPLES

Variable	Nonveterans		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.37	4.18*	0.25	0.82
TENURE	0.0009	7.60*	0.0004	0.58
EXPER	0.0017	10.39*	0.0022	3.91*
SCHOOL	0.05	9.36*	0.08	3.78*
UNEMPLOY	-0.006	-3.38*	-0.006	-0.92
SMSA	0.10	5.19*	0.10	2.27**
MALE	0.08	13.62*	0.04	4.94*
NONWHITE	-0.07	-3.79*	-0.09	-1.86***
HEALTHY	0.10	3.21*	0.04	0.30
MARRIED	0.05	3.01*	0.06	1.60
UNION	0.08	10.32*	0.04	6.02*
NOJOBS	0.007	1.87***	-0.006	-1.69***
TOTLCIV	0.0014	4.82*	-	-
TOTLMIL	-	-	0.0018	2.30**
R-squared	0.27		0.28	
Prob > F	0.0001		0.0001	
Sample Size	2851		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

TABLE 14. RESULTS OF MODEL (5) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-values (ii)	Coefficient (iii)	t-values (iv)
Intercept	0.40	4.89*	0.26	0.86
TENURE	0.0009	7.36*	0.0021	0.59
EXPER	0.0015	10.18*	0.0021	3.85*
SCHOOL	0.05	10.44*	0.06	3.83*
UNEMPLOY	-0.009	-3.90*	-0.006	-0.91
SMSA	0.06	5.65*	0.12	2.29**
MALE	0.24	15.30*	0.24	4.98*
NONWHITE	-0.08	-4.48*	-0.09	-1.85***
HEALTHY	0.13	3.31*	0.02	0.18
MARRIED	0.06	3.58*	0.06	1.60
UNION	0.23	11.83*	0.31	5.99*
NOJOBS	0.002	0.59	-0.018	-1.73***
TOTLCIV	0.0012	4.06*	0.0003	0.30
TOTLMIL	0.0035	5.11*	0.0018	2.34**
MILCIV	-0.0007	-0.016	-0.0560	-1.08
R-squared	0.26		0.29	
F stats	0.0001		0.0001	
Sample Size	3286		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

consistent with those found in model (4), which differs from model (5) in that the complimentarity variable is not included.

Contrary to the findings of Mangum and Ball [Ref. 9], the complimentarity variable, MILCIV, is statistically insignificant for both the full thesis sample and the veteran subsample. Veterans may receive civilian training to improve upon the skills learned in the military, learn a new skill, or as remedial training if the military training they received is inadequate for their private sector job. Had veterans received civilian training exclusively to enhance the skills and knowledge acquired in the military, then a significant and positive coefficient for the complimentarity variable would be expected. However, the possible negative effect of veterans requiring remedial civilian training counters the positive effect of those who receive civilian training to enhance the skills learned in the military, thus the net effect of the complimentarity variable is zero.

F. MODEL (6)

The results of model (6), the natural logarithm of wages as a function of demographic variables, aggregate training variables and occupation dummy variables, for the full thesis sample and the veteran subsample are shown in Table 15. The addition of the occupation dummy variables slightly reduced the significance and earnings effects of several variables for the full thesis sample. A comparison of the results of model (5) and model (6) shows that TENURE, EXPER, SCHOOL, UNEMPLOY,

TABLE 15. RESULTS FOR MODEL (6) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.53	6.33*	0.15	0.50
TENURE	0.0013	6.99*	0.0013	0.49
EXPER	0.0013	9.08*	0.0008	3.87*
SCHOOL	0.04	8.74*	0.020	3.70*
UNEMPLOY	-0.005	-3.40*	-0.005	-0.73
SMSA	0.10	5.67*	0.12	2.47**
MALE	0.22	12.21*	0.20	3.92*
NONWHITE	-0.06	-3.73*	-0.07	-1.32
HEALTHY	0.13	3.43*	0.11	0.82
MARRIED	0.04	2.90*	0.020	1.41
UNION	0.22	11.84*	0.32	6.14*
NOJOBS	0.004	1.22	-0.017	-1.62
TOTLCIV	0.0008	3.14*	-0.0004	-0.58
TOTLMIL	0.0008	4.57*	0.0014	1.75***
PROFESS	0.15	3.50*	0.15	1.35
TECH	0.20	4.91*	0.31	2.37**
SALES	-0.05	-1.47	0.02	0.16
ADMIN	0.05	1.57	0.04	0.50
SERVICE	-0.16	-5.24*	-0.05	-0.63
CRAFT	0.13	4.20*	0.20	2.73*
OPMACHN	0.03	0.95	0.02	0.21
OPMOVNG	-0.02	-0.63	0.05	0.55
FARMING	-0.18	-4.14*	0.002	0.01
R-squared	0.31		0.32	
Prob > F	0.0001		0.0001	
Sample Size	3286		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

MALE, NONWHITE, MARRIED, UNION, TOTLCIV, and TOTLMIL are less significant (though still significant) and have a smaller effect on earnings when the occupation dummy variables are included in the analysis.

The results for the full sample, columns (i) and (ii), show the estimated coefficients of occupations with high mean earnings (PROFESS, TECH, and CRAFT) are significant and positive. The estimated coefficients of occupations with low mean earnings (SERVICE and FARMING) are significant and negative. Those occupations with mean earnings close to the omitted category (SALES, ADMIN, OPMACHN, and OPMOVNG) are statistically insignificant. A technical occupation has the greatest positive effect on earnings, increasing earnings 25 percent. A farming occupation has the greatest negative effect on earnings, decreasing earnings 18 percent.

Also, for the full thesis sample, the effect of total civilian training was reduced from a 0.12 percent increase in earnings per week of training to an 0.08 percent increase in earnings per week of training. The effect of total military training was reduced from a 0.35 percent increase in earnings per week of training to a 0.28 percent increase in earnings per week of training. Thus, some of the effect of occupation on earnings is captured by training variables when occupation variables are not included in the model, and therefore are reduced in magnitude with the inclusion of the occupation dummy variables in the model.

Two variables, NONWHITE and NOJOBS, became insignificant with the addition of the occupation dummy variables for the veteran subsample (model (5) versus model (6)). The significance and effect of gender on earnings decreased slightly and the effect of total military training also decreased slightly. TECH and CRAFT are the only two occupations significant for the veteran subsample, with both positively affecting earnings.

The inclusion of the occupation dummy variables reduced the magnitude and statistical significance of the estimated coefficients of the training variables, but not to the extent found by Hotchkiss [Ref. 6]. In Hotchkiss' study of secondary vocational training, when occupation dummy variables were added all but one training variable became statistically insignificant. In contrast, the results of this thesis show that TOTLCIV and TOTLMIL are reduced only slightly in statistical significance with the addition of occupation dummy variables.

G. MODEL (7)

The results of model (7), the natural logarithm of wages as a function of demographic variables, private sector training variables, military training variables, and occupation dummy variables, for the full thesis sample and veteran subsample are presented in Table 16. The explanatory

TABLE 16. RESULTS FOR MODEL (7) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
Intercept	0.53	6.35*	0.13	0.44
TENURE	0.0008	6.95*	0.0004	0.60
EXPER	0.0013	9.36*	0.0021	3.83*
SCHOOL	0.04	8.57*	0.07	3.46*
UNEMPLOY	-0.008	-3.42*	-0.006	-0.99
SMSA	0.10	5.53*	0.12	2.31**
MALE	0.[illegible]4	12.03*	0.22	4.12*
NONWHITE	-0.06	-3.64*	-0.06	-1.27
HEALTHY	0.13	3.42*	0.14	1.05
MARRIED	0.04	2.81*	0.05	1.[illegible]5
UNION	0.22	11.70*	0.32	6.23*
NOJOBS	0.005	1.52	-0.015	-1.40
PREOJT	0.000[illegible]	0.57	-0.0042	-0.80
PREAPP	0.000[illegible]	3.63*	0.0016	0.19
PREOFF	0.0006	1.85**	0.0011	0.87
UNCOMOJT	0.0018	1.29	0.001[illegible]	1.27
COMPOJT	0.0035	2.07**	-0.0009	-0.11
UNCOMAPP	0.0014	1.20	0.0020	0.67
COMPAPP	0.0024	1.79**	-[a]	-[a]
CURROFF	-0.0003	-0.52	-0.0011	-1.29
MILFORML	0.0082	4.71*	0.001[illegible]	2.09**
MILOJT	0.0014	1.35	0.0005	0.59
PROFESS	0.15	3.40*	0.12	1.09
TECH	0.25	4.81*	0.30	2.28**
SALES	-0.06	-1.54	0.02	0.23
ADMIN	0.[illegible]5	1.60	0.05	0.61
SERVICE	-0.16	-5.28*	-0.05	-0.65
CRAFT	0.12	3.72*	0.18	2.49**
OPMACHN	0.03	0.93	0.02	0.[illegible]9

TABLE 16. (continued) RESULTS FOR MODEL (7) FOR FULL SAMPLE (INCLUDES VETERANS) AND VETERAN SUBSAMPLE

Variable	Full Sample		Veterans	
	Coefficient (i)	t-Value (ii)	Coefficient (iii)	t-Value (iv)
OPMOVNG	-0.03	-0.70	0.05	0.50
FARMING	-0.18	-4.16*	0.001	0.01
R-Squared	0.32		0.34	
Prob > F	0.0001		0.0001	
Sample Size	3286		435	

* significant at the 0.01 level
** significant at the 0.05 level
*** significant at the 0.10 level

*The explanatory variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

variable COMPAPP is omitted from the model for the veteran subsample because no veterans in the sample had completed a private sector apprenticeship.

Model (7) is similar to model (3) (Table 11), except with the inclusion of the occupational dummy variables. Comparing the results of model (7) to those of model (3) for the full sample, most demographic variables (TENURE, EXPER, SCHOOL, UNEMPLOY, MALE, NONWHITE, and MARRIED) decreased in significance and effect on earnings as a result of including the type of occupation in the analysis. All training variables that were significant in model (3) (PREAPP, PREOFF, COMPOJT, UNCOMAPP, COMPAPP, MILFORML, and MILOJT) were also reduced in significance and magnitude as a result of the inclusion of the occupational dummy variables, with

uncompleted apprenticeship and military on-the-job training becoming insignificant. The types of training with the greatest effects on earnings are still, in descending order, formal military training, completed on-the-job training for the current/most recent job, previous apprenticeship, and completed apprenticeship for current/most recent job.

Similar to the results of model (6) for the full sample, estimated coefficients of occupations with high mean earnings (PROFESS, TECH, and CRAFT) were significant and positive, and estimated coefficients of occupations with low mean earnings (SERVICE, and FARMING) were significant and negative. Those occupations with mean earnings close to that of the omitted category (SALES, ADMIN, OPMACHN, and OPMOVNG) were statistically insignificant.

V. CONCLUSIONS

A. FIRST RESEARCH QUESTION

The answer to the question, "Does military training affect the private sector wages of veterans?" appears to be yes. The analysis of model (4), which specified wages as a function of demographic variables and aggregate training variables, presented in Table 12, showed that total military training (TOTLMIL) increases the post-service private sector earnings of veterans 0.18 percent per week of training, while total civilian training (TOTLCIV) is statistically insignificant in increasing earnings for veterans.

B. SECOND RESEARCH QUESTION

How does the payoff to military training for veterans compare to the payoff to civilian training for nonveterans? Table 13 shows that total military training for veterans increases post-service earnings by 0.18 percent per week of training, when private sector training variables are not included in the analysis. Total private sector training for nonveterans increases earnings by 0.14 percent per week of training, a roughly comparable effect.

C. THIRD RESEARCH QUESTION

For the veteran, are military and post-military private sector training complementary? That is, does military

training yield a differential payoff when combined with private sector training? The answer to this question appears to be no. The analysis of model (5), with wages as a function of demographic variables, aggregate training variables, and an interaction (complimentarity) variable, showed that the effect of having both military training and private sector training is statistically insignificant for the full thesis sample and the veteran subsample. As discussed previously, the reason a veteran receives private sector training may be to enhance the knowledge and skills learned in the military, to learn a new skill if working in a occupation not utilizing the training received in the military, or as remedial training if the training received in the military is inadequate for his/her private sector job. If all private sector training received by veterans enhanced the military training received, then a differential payoff would be expected. However, if a veteran receives private sector training due to the military training received being either inapplicable to or inadequate for his/her private sector job, then the effect of having both military and private sector on earnings would be negative. Therefore, the statistically insignificant effect of complimentarity is presumed to be caused by the combined negative and positive reasons for veterans receiving private sector training.

D. FOURTH RESEARCH QUESTION

Does military training affect private sector wages of veterans when occupation is included in the analysis? Yes. A comparison of the results of model (4), with wages specified as a function of demographic variables and aggregate training variables, with the results of model (6), wages as a function of demographic variables, aggregate training variables, and occupation dummy variables, shows the significance level and effect on earnings of military training decreased when type of occupation was included in the analysis. However, total military training was still significant at the 0.10 level and increased wages by 0.14 percent per week of training for the veteran subsample.

The results of model (7), wages as a function of demographic variables, private sector training variables, military training variables, and occupation dummy variables for the full thesis sample, show that of the ten training categories, only five remain statistically significant at least at the 0.10 level. Only formal military training (MILFORML) and previous private sector apprenticeship (PREAPP) are statistically significant at the 0.01 level. MILFORML has the greatest effect on earnings, increasing earnings 0.82 percent per week of training, whereas the COMPOJT, with the next greatest effect on earnings, increases earnings 0.35 percent per week of training.

E. CONCLUSIONS

This thesis shows that the greatest payoff of training to veterans' private sector earnings is by far formal military training. The effect of formal military training on private sector earnings for veterans is greater than the effect of an apprenticeship for a nonveteran. The results suggest that veterans also receive a greater benefit from private sector experience, union membership and schooling than nonveterans. Not only do veterans seem to benefit more from positive factors, but they appear to be less affected by negative factors. UNEMPLOY, NONWHITE, FARMING, and SERVICE are statistically insignificant for veterans in the final model (Table 16), whereas they are negative and highly significant for the full thesis sample.

F. RECOMMENDATIONS

Numerous questions about the benefit/effectiveness of military training in the private sector are not answered in this thesis, including: Do veterans require additional training after leaving the military to become employable? How does military training affect a veteran's employability? Which military training is most beneficial in the private sector? Does a military training-occupation match affect private sector earnings? These questions require further research in order for training and manpower planners to better assess the effectiveness of military training for veterans and assist policy-makers in designing transition programs for

veterans. As stated earlier, well-trained veterans will not only benefit veterans themselves, but national defense and society as a whole.

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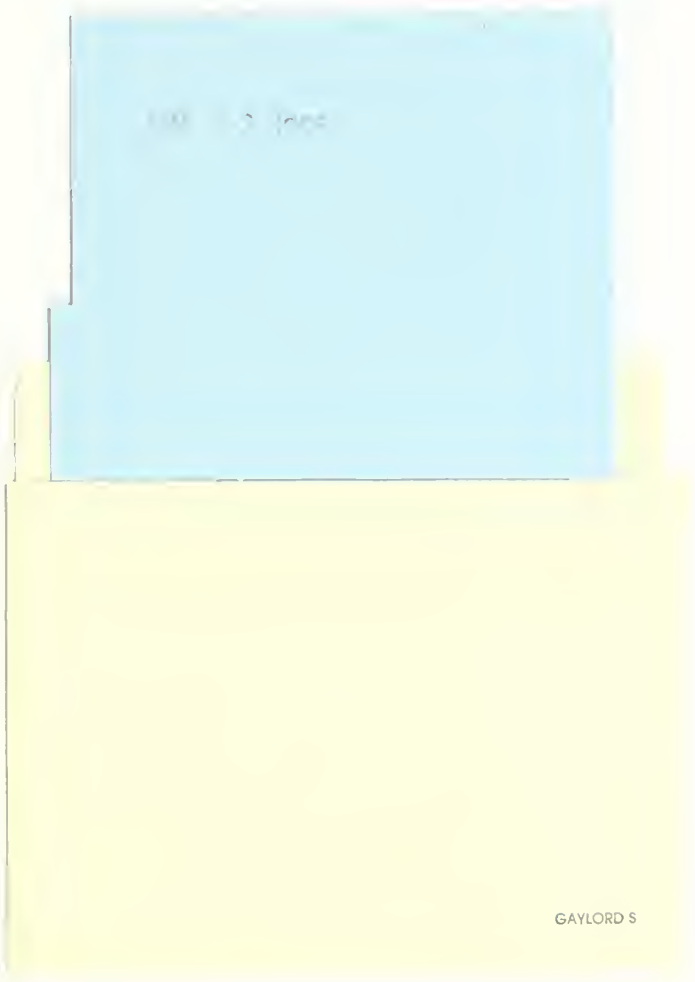

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